SUB-METERING GUIDELINE

1 Scope:

This guideline applies to the installation, ownership and maintenance of metered connections to new multi-unit complexes.

2 Purpose:

To provide a framework for FRW employees and consumers/customers for sub-metering of individual lots/units within new and existing complexes to ensure the QPW Code is effectively implemented.

3 Related Documents:

Primary
Sub-Metering Policy

Secondary
Body Corporate and Community Management Act 1997
Building Act 1975
Building Regulation 2006
Plumbing and Drainage Act 2002
Public Health Act 2005
Plumbing and Drainage Regulation 2003
Sustainable Planning Act 2009
Water Efficiency Labeling and Standards Act 2005
Water Supply (Safety & Reliability) Act 2008
Australian Standard AS3688-2055 – Water Supply – Metallic Fittings and End Connectors
Australian and New Zealand Standard AS/NZS3500.1:2003 – Plumbing and Drainage – Water Services
Australian and New Zealand Standard AS/NZS4020:2005 – Testing of Products for Use in Contact with Drinking Water
Australian Technical Specifications
Building Code of Australia
Capricorn Municipal Development Guidelines Drawings and Specifications
Fitzroy River Water Fees and Charges Form
Installation of Sub-Meters Application Form
Plumbing Code of Australia
Queensland Plumbing and Wastewater Code

4 Definitions:

To assist in interpretation, the following definitions apply:

AMR	Automatic meter reading
Accessible	A sub-meter is able to be accessed within reasonable time (between 8am and 5pm). Horizontal complexes are deemed accessible if all the sub-meters are located in the boundary of

	each property in a non-locked enclosure or a non-key access (PIN code) to the complex is available.
Body Corporate	An entity created under section 30 of the *Body Corporate and Community Management Act 1997*. The members of the body corporate for a community title scheme are the owners of all lots included in the scheme. The purpose of the body corporate is to manage common property.
Boundary	The area between the property external walls and pathways, streets or fences.
Common Property	As per section 10 of the *Body Corporate and Community Management Act 1997:* Freehold land forming part of the scheme land but not forming part of a lot included in the scheme.
Communal Hot Water System	A common system used to supply hot water to flats, apartments, houses or units in complexes.
CTS	Community Title Scheme As per section 10 of the *Body Corporate and Community Management Act 1997:* (a) A single community management statement recorded by the Registrar of Titles identifying land; and (b) The scheme land.
Complex	Includes community titles schemes and multi sole occupancy units classified under the Building Code of Australia under Class 2, 4, 5, 6, 7 or 8 building and each storey of a Class 5.
Connectivity Inspection	A verification process in which each sub-meter is matched with its respective unit. The aim of this inspection is to ensure that each unit in a given complex is supplied through one sub-meter only and to make sure that the respective sub-meter is marked clearly with the number/description of that unit.
Developer	As per Schedule 6 of the *Body Corporate and Community Management Act 1997:* The original owner or other person responsible for developing the scheme.
Existing Complex	Any complex approved prior to 1 January 2008.
FRW	Fitzroy River Water A commercial business unit of Rockhampton Regional Council responsible for operating and maintaining water and sewerage assets throughout the Region.
Horizontal Complex	Free standing units or attached units supplied through one water meter for each unit and where the meter is usually located at the boundary of the unit.
Lot	*As per section 10 of the Sustainable Planning Act 2009:* (a) A lot under the *Land Title Act 1994*; or (b) A separate, distinct parcel of land for which an interest is recorded in a register under the *Land Act 1994*; or (c) Common property for a community titles scheme under the *Body Corporate and Community Management Act 1997*; or (d) A lot or common property to which the *Building Units and Group Titles Act 1980* continues to apply; or (e) A community or precinct thoroughfare under the *Mixed Use Development Act 1993*; or A primary or secondary thoroughfare under the *Integrated Resort Development Act 1987* or the *Sanctuary Cove Resort Act 1985*.
Master Meter	The primary meter installed on the line between the property's water connection to the reticulation system and the sub-meters,

	and used to register the total water consumption of the complex.
MPE	Maximum Permissible Error A maximum point that a meter is allowed to operate within.
New Complex	Any complex approved after 1 January 2008.
PAC	Pattern Approval Certificate A certificate issued by the National Measurement Institute which states that a meter of certain make and model has passed a set of tests and met a set of requirements in order to be used by a service provider for trade purposes.
Positive Displacement Meter	A meter used to measure the volumetric flow of rate by dividing fluid into separate and equal volumes that can be counted over time. Examples of positive displacement meters include the rotating piston and nutating disc which are used for flow measurement in the water industry. These meters can be orientated in any direction without compromising accuracy.
QPW Code	Queensland Plumbing and Wastewater Code
Service Provider	Provider of water to properties through a pressurised network of pipes.
Sole Occupancy Unit	A room or other part of the building for occupation by one or a joint owner, lessee, tenant, or other occupier. This could be a dwelling, a room or a suite of associated rooms in a building classified under the Building Code of Australia as a Class 2, 4, 5, 6, 7 or 8 building. A sole occupancy unit also includes any part of the building that is common area or common property.
Sub-Meter	A term used to describe individual water meters within multi-unit complexes.
Sub-Metering	The installation of individual water meters to measure water consumption to individual houses, units, flats or apartments that form part of a complex.
Unit	A house, flat, commercial or workspace, or an apartment within a complex.
Vertical Complex	Includes complexes of more than one storey and complexes where units are supplied through meters located inside the complex in a common area such as stairwell landings or beside elevator shafts.
Water Meter	As per the *Plumbing and Drainage Act 2002*: A device, including equipment related to the device, for measuring the volume of water supplied to premises. For example: a pulse meter or an automatic meter reader and associated technology, or similar devices.

5 Guideline:

Complexes that meet the below criteria and draw a water supply from FRW must have sub-meters installed:

- Each lot/unit within a CTS, including the common property;
- The sole occupancy unit of a Class 2, 4, 5, 6, 7 and 8 building in a water service provider's area; and
- Each storey of a Class 5 building in a water service provider's area where the building consists of more than one storey and sole occupancy units are not identified at the time of the building's plumbing compliance assessment.

Existing complexes are exempt from the provisions of the Sub-Metering Policy, as it is accepted that it may be impractical to sub-meter all lots/units in existing complexes. It is optional whether an existing complex elects to install sub-meters; however, should they

elect to do so, all associated costs will be the responsibility of the owner and the relevant conditions of this guideline will apply.

5.1 Application Process

The developer must complete the Installation of Sub-Meters Application Form and submit it with drawings, hydraulic plans and the approximate location of each sub-meter in the complex to FRW for approval.

The developer must also submit adequate data on their selected sub-meter (for example: make and model, PAC, related pamphlets, data sheets, details regarding sub-meter enclosure location and type, and if applicable, details of any AMR, equipment and location).

A PAC can be issued for various sub-meters which can only operate in the horizontal position. Where the developer is proposing a vertical mounted sub-meter it must be a positive displacement meter which also has an appropriate PAC.

5.2 Connectivity Inspection

If the developer requires FRW to read the sub-meters, FRW will need to conduct a connectivity inspection of the sub-meters. If a connectivity inspection is necessary, the developer will need to complete the relevant section of the FRW Fees and Charges Form and submit it with the appropriate fee.

If a connectivity inspection is not requested, FRW will only read the master meter, and it will be the responsibility of the body corporate to read the sub-meters and divide the costs accordingly.

5.2.1 Conducting the Connectivity Inspection

FRW will conduct the connectivity inspection to ensure the installation of the sub-meter has been undertaken in accordance with the *Plumbing and Drainage Act 2002*, Australian and New Zealand Standard AS/NZS 3500.1:2003 – Plumbing and Drainage – Water Services, and FRW approved hydraulic design and drawings. During the inspection FRW will verify that:

- Sub-meters are accessible for reading and maintenance;
- The serial number on each sub-meter matches the serial number shown on the As-Constructed drawing; and
- Each sub-meter is correctly installed and only measuring flow to the particular lot/unit being tested. Verification will be done by physical testing.

Once the connectivity inspection is successful, FRW's Sub-Metering Inspector will record the meter reading on each sub-meter and tag with details such as the sub-meter number and unit number.

5.2.2 Unsuccessful Connectivity Inspection

If testing shows that the sub-meter has not been correctly installed then the developer will be required to:

- Investigate and remove any cross connections and mismatches;
- Prepare new As-Constructed drawings; and
- Make an application for another connectivity inspection to be conducted, including the payment of the relevant fees.

5.3 Meters

5.3.1 Master Meter

A master meter will be installed at the property boundary as a component of the water connection to the complex to measure the water supply entering the complex.

The master meter is to be installed by FRW with the developer responsible for all costs.

The master meter will remain the property of FRW and FRW will be responsible for maintenance, verification, calibration and replacement of that master meter.

Any pipes internal to the complex site between the master meter and the sub-meters will remain the property of the owner. All maintenance and replacement costs associated with such infrastructure will be payable by the owner.

5.3.2 Sub-Meters

The developer will be responsible for the installation of sub-meters, including the supply of equipment and materials. Equipment, materials and installation must be to FRW's requirements and:

- Must be the same make and model for all similar sized sub-meters installed in a complex (alternatives may be proposed where different sized connections are required in a single complex); and
- Must be approved by FRW.

Only licensed plumbers are permitted to install sub-meters in complexes. Sub-meters will be fitted with an anti-tampering device (for example: seal) and work will be carried out in compliance with relevant Acts, Regulations, By-Laws, Local Laws and this guideline.

Each sub-meter will have an appropriate identification tag. Each tag will have the sub-meter number and unit number or common area identified. The sub-meters will be tagged by FRW during the connectivity inspection.

Sub-meters will be housed in an appropriate enclosure as set out in section 5.7 and 5.8 of this guideline.

5.4 Cold and Hot Water Systems

Sub-meters of 20 millimetres will be installed within complexes to measure individual units and common property water supply.

The developer must seek approval from FRW prior to installation of sub-meters required to be installed of a size greater than 20 millimetres.

Hot water systems will be metered as per the cold water systems, with individual meters provided. Where hot water is supplied from a communal hot water system, a sub-meter is required to be installed on each individual hot water supply to each unit/complex.

5.5 Sub-Meter Location

5.5.1 Horizontal Complexes

Horizontal complexes will be supplied through one sub-meter for each unit, where the sub-meter is usually located at the boundary of each unit in an accessible area.

Sub-meters will be grouped together and installed within three metres of the property boundary or in an easily accessible common area, to facilitate direct reading, testing and replacement.

Sub-meters must be housed in meter boxes and should:

- Not be installed in locations that pose a potential risk to the general public (for example: walkways); and
- Have a non-slip surface for the below ground meter box lid.

All proposed boxes and locations must be approved by FRW.

Common property areas must also be sub-metered (for example: designated common facility areas such as pool areas or barbeque areas).

Where FRW considers that the proposed location will not be accessible for the purposes of obtaining the sub-meter reading directly, an AMR system may need to be installed at the developer's cost.

5.5.2 Vertical Complexes

There are two possible modes of installation of sub-meters for vertical complexes.

5.5.2.1 Building Complexes up to and including three-storeys

In buildings complexes up to and including three-storeys and where the hydraulic analysis of the plumbing shows an acceptable level of pressure loss, sub-meters will be installed in a weather-resistant cabinet. The cabinet will be located at an accessible side of the building or in a cabinet in a common area (stairwell landing, beside elevator shaft, etc.) on the ground floor.

Alternatively, if the area is paved, FRW may approve installation of the sub-meter in a meter box below ground, subject to the meter box being of sufficient size and being easily accessible.

5.5.2.2 Building Complexes more than three storeys

Building complexes of more than three storeys will require the installation of an AMR system which utilises an accessible water meter data reading panel to obtain sub-meter data.

Vertical complexes will require a sub-meter enclosure to house the sub-meter. It is envisaged that in most cases not more than one sub-meter enclosure will be required for each storey.

The location of the sub-meter enclosures will be in a common area to allow access to the sub-meters for maintenance or replacement.

If the sub-meters are to be located within a fire cabinet enclosure, the fire and safety rating must not be compromised and the sub-meter enclosure must be adequately drained to prevent seepage into the infrastructure.

If the vertical complex is located within a dual reticulated area (potable and recycled water), sub-meters will be required on both supplies.

Common property areas must also be sub-metered (for example: designated common facility areas such as pool areas or barbeque areas).

5.6 Meter Reading

FRW will read sub-meters and master meters in accordance with its Water Meter Reading Program at least every six months, either from the sub-meter or from the water meter data reading panel, if an AMR system has been installed.

FRW meter readers may upgrade or reconfigure the AMR system once FRW has assumed responsibility of the system.

5.6.1 Automatic Meter Reading

When an AMR system is utilised:

- A water meter data reading panel must be installed in a location approved by FRW in a common area within an approved water meter data reading enclosure; and
- The master meter and all sub-meters must be linked to the AMR system to enable the meter reading data to be collected from the water meter data reading panel.

The AMR system must be installed by a company/individual approved by the manufacturers and the developer will be responsible for all costs.

The AMR system, related equipment and installation must be approved by FRW.

5.7 Sub-Meter Enclosures

5.7.1 Sub-Meter Enclosures (Vertical Complexes)

Sub-meter enclosures in vertical complexes must comply with the following criteria:

- Be installed in a common area within three metres of the property boundary;
- Have a latch that can be opened by hand;
- Must not be classifiable as a confined space for entry purposes;
- A minimum of two square metres will be made available in front of the sub-meter enclosure as free working space;
- Have adequate lighting;
- The enclosure door(s) must have the ability to be opened completely and held in the open position;
- Be positioned to enable access without additional aids; and
- Be marked clearly with the words 'Water Sub-Meters' with a minimum letter height of 25 millimetres in the centre of the outside of the enclosure door.

Where more than one sub-meter enclosure has been installed, enclosures will have an individual identification number in a minimum letter height of 25 millimetres in a legible permanent print, fixed to the outside of the enclosure.

The enclosure must be drained to prevent seepage into the infrastructure. External enclosures are to be corrosion resistant and of structural design similar to that of electrical enclosures.

5.7.2 In-Ground Sub-Meters

The sub-meter assembly will be installed within a suitably sized prefabricated meter box with a non-slip lid. Refer to the Capricorn Municipal Development

Guidelines website (www.cmdg.com.au) under Standard Drawings – Water, drawing number CMDG-W-091.

The lockable control valve handle will point in the direction of flow when the valve is in the open position.

The handle will have the ability to be locked in the closed position by the alignment of the two six millimetre diameter holes.

Sub-meters should be tagged with a plastic tag no smaller than 50 millimetres by 25 millimetres, fixed to the pipe work adjacent to the meter, or attached to the meter and have the unit number and meter number in permanent ink without interfering with data recording equipment or the ability to need such equipment.

Pipe work must be flushed and free of debris before final installation of the sub-meter.

Fittings must conform to Australian Standard AS4020 - 2005 - Testing of Products for Use in Contact with Drinking Water with regard to their effect on the quality of water.

Male and female threaded end connectors must comply with the requirements of Australian Standard AS3688:2005 – Water supply – Metallic Fittings and End Connectors.

5.8 Water Meter Data Reading Enclosures

Complexes that require an AMR system will need to install an accessible enclosure to house the water meter data reading panel (to be approved by FRW).

The enclosure must house the common 240 volt electrical power supply for FRW use. The location of the water meter data reading enclosure must comply with the following criteria:

- Be installed in a common area within three metres of the property boundary;
- Have a latch that can be opened by hand;
- Must not be classifiable as a confined space for entry purposes;
- A minimum of two square metres will be made available in front of the meter data reading enclosure as free working space;
- Have adequate lighting;
- The enclosure door(s) must have the ability to be opened completely and held in the open position;
- Be positioned to enable access without additional aids;
- Must be suitably vented to allow for purging of any heat created by internal equipment or external weather factors;
- Meter reading screens must be no lower than 1200 millimetres from the floor and no higher than 1800 millimetres and require no aids to assist in reading; and
- Be marked clearly with the words ‘Water Meter Data’ with a minimum letter height of 25 millimetres and be permanently fixed in the centre of the outside of the door.

The meter reading screens and data equipment must be installed within a totally enclosed, self-supporting structure.

The enclosure will house the common electrical power supply for FRW use and will be drained to prevent seepage into the infrastructure.

The material of an external enclosure shall be a minimum of two millimetre thick 316 grade stainless steel, or three millimetre 5251 or 5083 alloy aluminium powder coated colour Beige (as per Australian Standard AS 2700S-2011 colour - X43), or matched to suit building architecture.

External door(s) will have a three-point locking system (locking bars to be fitted with rollers) and profile locking swing handles capable of exerting sufficient pressure to ensure proper contact of the sealing medium all around the door, with lift off type hinges chrome plated solid brass body (80 millimetre minimum length), with stainless steel hinge pins.

5.9 Ownership and Maintenance of Sub-Meters

FRW may at any reasonable time conduct either on-site testing or take a proportion of sub-meters for laboratory testing at FRW's expense. The objective of this testing is to ensure that the sub-meters are working within the MPE over different flow rates. The body corporate will be advised in advance of any such testing so that it will be aware of interruptions to the water supply and the body corporate will be responsible for advising its occupants.

Based on the testing results, FRW may conduct further testing on other samples of sub-meters, test all sub-meters, replace some or all sub-meters, or leave the existing sub-meters if found operating within the MPE over different flow rates.

Where AMR technology is utilised within a complex, the developer will be required to assume responsibility for any defects in the materials or equipment associated with the AMR system for a period of 12 months after the date of final plumbing approval (the defects liability period). After this 12 month period, FRW will conduct a further system inspection of the AMR installation and assume responsibility of the system. If the system fails this inspection, the developer will be required to rectify any identified issues prior to FRW assuming responsibility of the system.

6 Review Timelines:

This guideline will be reviewed when any of the following occur:

6.1 The related information is amended or replaced; or

6.2 Other circumstances as determined from time to time by the General Manager.

7 Responsibilities:

Sponsor	Chief Executive Officer
Business Owner	General Manager Regional Services
Guideline Owner	Manager Fitzroy River Water
Guideline Quality Control	Corporate Improvement and Strategy

ROBERT HOLMES
GENERAL MANAGER REGIONAL SERVICES

Appendix A

Sub-Metering Schematic Diagrams–Standard Drawing

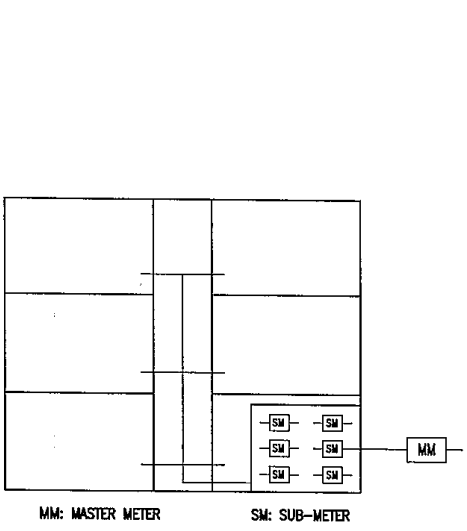

FIGURE.1–A SCHEMATIC DIAGRAM OF A LIMITED HIGH RISE DEVELOPMENT

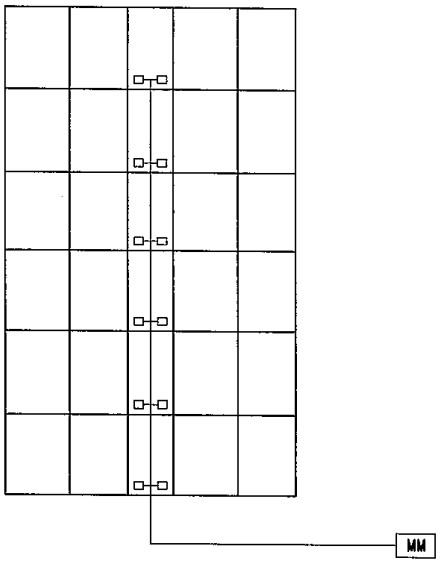

FIGURE.2–A SCHEMATIC DIAGRAM OF A HIGH RISE DEVELOPMENT(GREATER THAN 3 STORIES SHALL REQUIRE THE INSTALLATION OF AN AMR SYSTEM.)

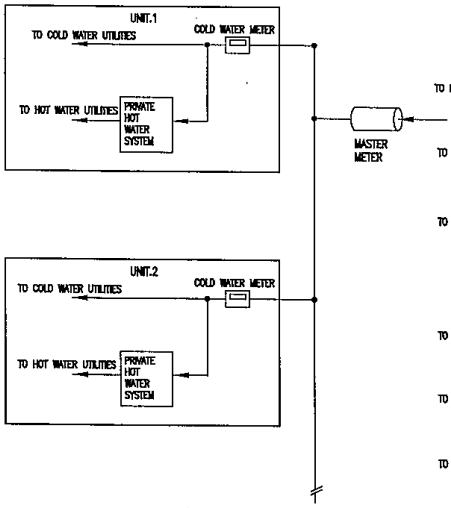

FIGURE.3– INDIVIDUAL HOT WATER SYSTEM ARRANGEMENT

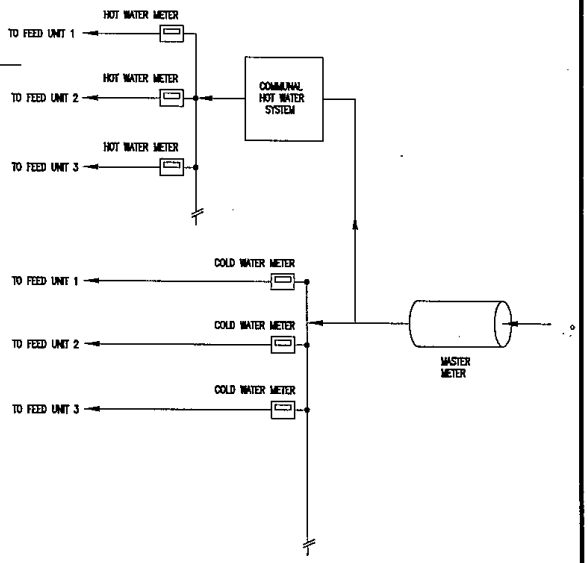

FIGURE.4–COMMUNAL HOT WATER SYSTEM(SUB METERING FOR HOT WATER SERVICE WITHIN UNITS)

FITZROY RIVER WATER
Business Unit of RRC